

REMARKS

Status of Application

Claims 1-19 were pending in this application. In the Office Action mailed February 13, 2009, claims 1-19 were rejected.

By this amendment, claims 1-3, 7-10 and 12-19 are pending as currently amended, and claims 20 and 21 are pending as new. Claims 4-6 and 11 are cancelled. No new matter is introduced by these amendments, which are fully supported by the specification.

Applicant requests reconsideration and allowance of claims 1-3, 7-10 and 12-21.

Applicant reserves the right to prosecute any withdrawn, cancelled, or non-elected claims and/or subject matter in separate applications.

35 U.S.C. § 101 Rejections

Examiner rejected claims 1-3, 9, 10, 16, and 18 as being non-statutory “device” claims, and claims 13 and 19 as being non-statutory “process” claims.

By this amendment, claims 1-3, 7-10, 12 and 14-18 are directed statutory “device” claims, and claims 13 and 19 are directed to statutory “process” claims. New claims 20-21 are directed to system claims.

Response to Remarks and 35 U.S.C. § 102 Rejections

Claims 1-19 were rejected as anticipated by Packer et al., U.S. Patent No. 6,556,695. In reply to Applicants’ previous remarks regarding claims 1, 12 and 13, among other things, the Examiner stated that Packer et al. discloses a “map image,” a “current image,” a “registered image,” and an “anatomical image.” In particular, the Examiner pointed to Packer et al. col. 10, lines 31-36 as evidence of the limitation that “the estimated position of the object in the map image being brought into register with the actual position of the object in the current image only a section of the map image being used” as claimed in Applicants’ previously presented claims 1, 12, and 13. (See Office Action mailed February 13, 2009, at 7) The Examiner further discussed the meaning of the term “anatomical image” as used in Packer et al.

Applicant respectfully submits that the Examiner has not provided evidence that Packer et al. disclose the limitation “the estimated position of the object in the map image being brought into register with the actual position of the object in the current image using

only a section of the map image which just covers the region around the object,” as claimed in Applicants’ amended claims 1, 12, 13, and 20.

In particular, Packer et al. disclose that “[r]egistration is achieved with ... low resolution versions of both images and registering successively high resolution images.” (See Packer et al., col. 10, lines 1-5) Thus, Packer et al. alter the resolution of the images to carry out the registration.

In contrast, Applicants invention advantageously uses “only a section of the map image which just covers the region around the object” to carry out the registration. This is a completely different limitation, instruction, and method for carrying out the registration than is disclosed by Packer et al.

With regards to claims 9 and 12, the Examiner stated that Packer et al. disclose a “cost function” which can be taken to mean an “estimation tool” which anticipates a “distance image” as described and recited by Applicants. (See Office Action mailed February 13, 2009, at 11)

Applicant respectfully submits that the Examiner has not provided evidence that Packer et al. disclose the limitation “a distance image from the map image by a distance transformation,” as claimed in Applicants’ amended claims 9 and 12. Applicants described the distance image in the specification at 11,

“The probability-based map image B can be rendered visible, for example, by a height relief across an image area, in which the highest points of the relief have the greatest probability of belonging to the vascular system. The associated distance image can then be defined as the gradient field of the relief, wherein each gradient vector points in the direction of the most direct route to a vessel. The calculation of the probability-based map images B and the associated distance images D can advantageously be effected off-line or in advance, the results being held in the memory.”

In contrast, Packer et al. disclose that they use an “iterative process” in which “a match image ... is translated, rotated and scaled” and that “low resolution versions of both images” are used. This is a quite different limitation, instruction, and method for carrying out the registration than is disclosed by Packer et al.

To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim. *See, Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383, 58 USPQ2d 1286, 1291 (Fed. Cir. 2001). Applicants use a “height relief across an image area” and a “gradient field of the relief” to determine an “associated distance image.” In contrast, Packer et al. disclose an “iterative process” in which “low resolution versions of both images” are used and “a match image ... is translated, rotated and scaled.” Thus, Packer et al. do not disclose every element and limitation of Applicants’ claimed invention, arranged as in Applicants claims.

Applicants believe that the above remarks have appropriately answered the Examiner’s rejections and shown Applicants’ claims to be patentable over Packer et al. Applicants do not acquiesce in any other statements made by the Examiner, and reserve the right to address further differences between the claimed invention and the cited reference.

Thus, Applicants respectfully submit that the rejections under 35 U.S.C. § 102 can be withdrawn.

CONCLUSION

Applicants respectfully submit that claims 1-3, 7-10 and 12-21 as amended distinguish patentably from the references of record and are in condition for allowance.

Should any questions remain, Examiner is invited to telephone Applicant’s representative at the number provided.

Respectfully submitted,

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